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IS 12944 (1990): Dithianon, Technical [FAD 1: Pesticides and Pesticides Residue Analysis]

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भारतीय मानक

डाईथायानोन, तकनीकी — विशिष्टि

Indian Standard

DITHIANON, TECHNICAL — SPECIFICATION

UDC 632·95·2 DIT

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 1990 **Price Group 1**

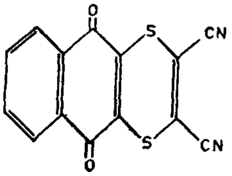
Pesticides Sectional Committee, FADC 1

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on 23 April 1990, after the draft finalized by the Pesticides Sectional Committee had been approved by the Food and Agriculture Division Council.

Dithianon, technical is employed in the preparation of fungicidal formulations for the control of many foliar diseases in agriculture.

Dithianon is the accepted common name by the International Organization for Standardization (ISO) for 2, 3-dicyano 1, 4-dithia-anthraquinone. The empirical and structural formulae and the molecular mass of dithianon are as indicated below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_{14}H_4N_2O_2S_2$		296·3

In the preparation of this standard, due consideration has been given to the provisions of the *Insecticides Act*, 1968 and Rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DITHIANON, TECHNICAL — SPECIFICATION

1 SCOPE

1.1 This standard prescribes the requirements and methods of sampling and test for dithianon, technical.

2 REFERENCES

2.1 The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 REQUIREMENTS

3.1 Description

The material shall be in the form of dark brown crystals with a coppery shine and a characteristic very faint odour. It shall be free from any extraneous impurities.

3.2 The material shall also comply with the requirements specified in Table 1.

Table 1 Requirements for Dithianon, Technical

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of this Standard	Clause No. of IS 6940 : 1982
(1)	(2)	(3)	(4)	(5)
i)	Dithianon content, percent by mass, *Min*	93·0	B	—
ii)	Moisture content, percent by mass, *Max*	1·0	—	4.2
iii)	Material insoluble in acetone, percent by mass, *Max*	0·1	—	9
iv)	Melting point, °C	215-220	—	6
v)	Acidity (as H_2SO_4), percent by mass, *Max*	0·5	—	13.5.4
	or			
	Alkalinity (as NaOH), percent by mass, *Max*	0·2	—	13.5.4

4 PACKING

4.1 The material shall be packed in double hessian jute bags (*see* IS 8115 : 1976). In addition, the material shall comply with the packing requirements given in IS 8190 (Part 1) : 1988.

5 MARKING

5.1 The following information shall be marked legibly and indelibly on each container in addition to the information as required under the *Insecticides Act*, 1968 and Rules framed thereunder:

a) Name of the material;
b) Indication of the source of manufacture ;
c) Batch number;
d) Date of manufacture and date of expiry;
e) Net mass of contents;
f) Nominal dithianon content, percent (*m/m*); and
g) A cautionary notice worded as in the *Insecticides Act*, 1968 and Rules framed thereunder.

6 SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed in IS 10946 : 1984.

7 TESTS

7.1 Tests shall be carried out in accordance with **3.1** and **3.2** and by the methods referred to in col 4 and 5 of Table 1.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1977) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(*Clause* 2.1)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
1070 : 1977	Water for general laboratory use (*second revision*)
6940 : 1982	Methods of test for pesticides and their formulations (*first revision*)
8115 : 1976	Double hessian jute bags for pesticides
8190 (Part 1) : 1988	Requirements for packing of pesticides: Part 1 Solid pesticides (*second revision*)
10946 : 1984	Methods for sampling of technical grade pesticides

ANNEX B

[*Table* 1, *Item* (i)]

DETERMINATION OF DITHIANON CONTENT

B-1 GENERAL

Two methods, namely, Method I and Method II, may be followed for determination of dithianon content. However, Method II shall be the referee method.

B-2 METHOD I

B-2.1 Principle

Dithianon on reaction with sodium tetraborate gives a chromophore, the absorption of which is measured at 365 nm by spectrophotometer.

B-2.2 Apparatus

B-2.2.1 *Spectrophotometer*

Equipped with 1 cm quartz absorption cells.

B-2.3 Reagents

B-2.3.1 *Chloroform*

Analytical reagent grade.

B-2.3.2 *Acetone*

Analytical reagent grade.

B-2.3.3 *Methanol*

Analytical reagent grade.

B-2.3.4 *Borate Buffer Solution*

*p*H 9·22, 0·01 M

Dissolve 0·381 4 g of sodium tetraborate in 100 ml water.

B-2.3.5 *Reference Standard Dithianon*

Of known purity.

B-2.4 Procedure

Weigh into a 100-ml volumetric flask accurately, a sample containing equivalent to 0·04-0·05 g dithianon. Dissolve in chloroform, make up the volume with chloroform, mix well, and filter if necessary. Transfer 2 ml of the solution with a pipette into another 100-ml volumetric flask containing about 70 ml methanol and 1 ml borate buffer solution, dilute to the mark with methanol and mix well. Measure the absorbance of the red-violet solution after 10-15 minutes at 365 nm using methanol as blank. Carry out the determination with standard dithianon in identical manner.

B-2.5 Calculation

Dithianon content, percent by mass

$$= \frac{A \times M_1 \times V \times 100}{B \times M_2 \times 550}$$

where

A = absorbance of sample;
B = absorbance of standard dithianon
V = factor of dilution = 50;
M_1 = mass, in g, of standard dithianon; and
M_2 = mass, in g, of sample taken for the test.

NOTE — The value of A_1 cm is given as 550 on the basis of an absorption of 0·550 for a 0·001 percent solution of reference dithianon standard of 100 percent purity of 365 nm.

B-3 METHOD II

B-3.1 Principle

Dithianon is reacted with morpholine to give a chromophore, the absorption of which is measured at 510 nm.

B-3.2 Apparatus

B-3.2.1 *Spectrophotometer*

Equipped with 1 cm quartz absorption cells.

B-3.3 Reagents

B-3.3.1 *Standard Reference Dithianon*

Of known purity.

B-3.3.2 *Dichloromethane*

Analytical reagent grade.

B-3.3.3 *Morpholine*

Analytical reagent grade.

B-3.4 Procedure

Weigh accurately into a 100-ml volumetric flask, a sample containing equivalent to 0·04 — 0·05 g dithianon. Dissolve with dichloromethane and dilute to the mark at 27 ± 2°C and mix well. Use an ice bath, if necessary. Using a pipette, transfer 10 ml of the sample solution into another 100-ml volumetric flask, add 10 ml morpholine and dilute to the mark with dichloromethane. Mix and keep the flask again at 27 ± 2°C. Measure the absorbance of the coloured solution in 1 cm cells at 510 nm using 10 percent, morpholine in dichloromethane as blank. Carry out the determination with standard reference dithianon in identical manner.

B-3.5 Calculation

Dithianon content, percent by mass

$$= \frac{A \times M_1 \times P}{B \times M_2}$$

where

A = absorbance of sample;
B = absorbance of standard dithianon;
M_1 = mass, in g, of standard dithianon;
M_2 = mass, in g, of sample taken for the test; and
P = percentage purity of standard dithianon.

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